

REMARKS

The Office Action dated May 22, 2007, has been carefully reviewed, and in view of the above changes and following remarks reconsideration and allowance of all the claims pending in the application is respectfully requested.

Claims 1-35 and 51-55 stand rejected. By this Amendment, claim 14 has been amended. Claims 1-35 and 51-55 remain pending.

The Amendments To The Claims

Applicants have amended claim 14 to generally improve its form in accordance with U.S. patent law. In particular, Applicants have amended claim 14 to correct an inadvertent typographical error. Support for this amendment can be found throughout the specification, for example, at least in paragraph [12], at lines 9 and 16-20; paragraph [33], at lines 8-9; paragraph [40], at line 13; paragraph [42], at line 19-20; paragraph [43], at lines 17-18; paragraph [44], at line 11 and line 21; paragraph [45], at lines 8-10; paragraph [46], at lines 18-21; and paragraph [49], at lines 20-25.

The Rejection Under 35 U.S.C. § 102(e) Over Odagawa

Claims 1-3, 7, 10-16, 22-26, 51 and 54 stand rejected under 35 U.S.C. § 102(e) as anticipated by Odagawa et al. (Odagawa), U.S. Patent Application Publication No. 2004/0052006 A1.

Applicants respectfully traverse this rejection. Applicants respectfully submit that the subject matter of any of claims 1-3, 7, 10-16, 22-26, 51 and 54 is not anticipated by Odagawa. Further, Applicants respectfully submit that the subject matter of any of claims 1-3, 7, 10-16, 22-26, 51 and 54 is patentable over Odagawa.

Regarding claim 1, Applicants respectfully submit that Odagawa does not anticipate the subject matter of claim 1. Moreover, Odagawa does not disclose or suggest that the material of interface layer 200 is crystalline when it is in isolation from both the claimed first layer and the

claimed tunnel barrier layer. At page 3, lines 10-15, of the Office Action dated May 22, 2007, the Examiner notes

that the phrase “wherein the interface layer material is crystalline wherein it is in isolation from both the first layer and the tunnel barrier layer” is merely the process limitation. The interface layer 220 is formed of Co-Fe alloy, which is the same material being used in the instant application (page 5, lines 35-39 of the instant application) such that the interface layer is inherently crystalline when in isolation from both the first layer and the tunnel barrier layer.

Applicants respectfully submit that the phrase “wherein the interface layer material is crystalline when it is in isolation from both the first layer and the tunnel barrier layer” appearing in claim 1 is not a process limitation regardless of what the Examiner considers of the phrase. Instead, the phrase is a requirement that the interface layer material be crystalline when it is in isolation from both the first layer and the tunnel barrier layer. In other words, the phrase is a requirement that the interface layer material be innately crystalline.

Further, Applicants respectfully submit that Odagawa does not disclose or suggest that the material of interface magnetic film 220 is crystalline when it is in isolation from both the first layer and the tunnel barrier layer. Instead, Odagawa discloses that interface magnetic film 220 is formed from “an alloy material containing at least one atom selected from Ni, Co, and Fe as a main component employed.”¹ (See Odagawa, paragraph [0194], lines 2-3.) In this regard, Odagawa discloses that interface magnetic film 220 is formed from an alloy material including Ni-Co-Fe as a main component. (See Odagawa, paragraph [0194], lines 4-8.) As such, Applicants respectfully submit that the alloy to which Odagawa refers for interface magnetic film 220 for the embodiment of Figure 7A is innately amorphous. Accordingly, Applicants respectfully submit that, contrary to the Examiner’s assertion that the alloy from which interface magnetic film 220 is formed, interface magnetic film 220 is not formed from the same material as the claimed subject matter. That is, Odagawa discloses that interface magnetic film 220 is

1. Applicants respectfully note that Odagawa does not state that interface magnetic film 220 is formed from an alloy material containing at least one atom selected from Ni, Co, or Fe as a main component employed. As disclosed by Odagawa, interface magnetic film 220 is formed from a Ni-Co-Fe alloy as a main component.

formed from an alloy material including Ni-Co-Fe as a main component.

In contrast and in one exemplary embodiment, the claimed interface layer comprises Co-Fe. In further contrast and in another exemplary embodiment, the claimed interface layer comprises Ni-Fe. Applicants respectfully submit that both exemplary materials are innately crystalline and, accordingly, are crystalline when in isolation from both the first layer and the tunnel barrier layer, as required by claim 1. More generally regarding the claimed subject matter, which is not limited to the exemplary materials just identified as comprising the claimed interface layer, the claimed interface layer is formed from at least one material selected from the group consisting of ferromagnetic materials and ferrimagnetic materials, and such that the claimed interface layer material is crystalline when it is in isolation from both the first layer and the tunnel barrier layer.

Thus, claim 1 is allowable over Odagawa. It follows that claims 2, 3, 7, 10-16, 22-24 and 51, which incorporate the limitations of claim 1, are each allowable over Odagawa for at least the same reasons that claim 1 is considered allowable.

Regarding claim 25, Applicants respectfully submit that claim 25 is not anticipated by Odagawa for reasons that are similar to the reasons that claim 1 is considered allowable. In particular, Odagawa does not disclose that magnetic interface layer 220 is crystalline when it is in isolation from both the first layer 210 and the tunnel barrier layer 120. Moreover, Odagawa does not suggest that magnetic interface layer 220 is crystalline when it is in isolation from both the first layer 210 and the tunnel barrier layer 120.

Thus, claim 25 is allowable over Odagawa. It follows that claims 26 and 54, which incorporate the limitations of claim 25, are each allowable over Odagawa for at least the same reasons that claim 25 is considered allowable.

Consequently, Applicants respectfully request that the Examiner withdraw this rejection and allow claims 1-3, 7, 10-16, 22-26, 51 and 54.

The Rejection Under 35 U.S.C. § 103(a) Over Odagawa

Claims 4-6 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Odagawa.

Applicants respectfully traverse this rejection. Applicants respectfully submit that the Examiner's proffered motivation for modifying Odagawa (assuming arguendo that the proffered motivation is proper) does not cure the deficiencies of Odagawa with respect to claim 1, the base claims of each of claims 4-6. In particular, the Examiner's proffered motivation for modifying Odagawa does not result in the Odagawa interface magnetic layer 220 being crystalline when it is in isolation from both the first layer 210 and the tunnel barrier layer 120.

Consequently, Applicants respectfully request the Examiner to withdraw this rejection and allow claims 4-6.

The Rejection Under 35 U.S.C. § 103(a) Over Odagawa In View of Hayakawa

Claims 8, 9, 52 and 53 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Odagawa in view of Hayakawa, U.S. Patent Application No. 6,754,100 B1.

Applicants respectfully traverse this rejection. Applicants respectfully submit that Hayakawa does not cure the deficiencies of claim 1, the base claim of each of claims 8, 9, 52 and 53. More specifically, Hayakawa does not disclose or suggest that the Odagawa interface magnetic layer 220 is crystalline when it is in isolation from both the first layer 210 and the tunnel barrier layer 120.

Consequently, Applicants respectfully request that the Examiner withdraw this rejection and allow claims 8, 9, 52 and 53.

The Rejection Under 35 U.S.C. § 103(a) Over Odagawa And Nishimura

Claims 17 and 18 stand finally rejected under 35 U.S.C. § 103(a) as unpatentable over Odagawa and Nishimura, U.S. Patent No. 6,226,197 B1.

This rejection is respectfully traversed. Applicants respectfully submit that Nishimura does not cure the deficiencies of claim 1, the base claim of claims 17 and 18. Specifically, Nishimura does not disclose or suggest that the Odagawa interface magnetic layer 220 is crystalline when it is in isolation from both the first layer 210 and the tunnel barrier layer 120.

Consequently, Applicants respectfully request that the Examiner withdraw this rejection and allow claims 17 and 18.

The Rejection Under 35 U.S.C. § 103(a) Over Odagawa In View Of Saito

Claims 19-21 stand finally rejected under 35 U.S.C. § 103(a) as unpatentable over Odagawa in view of Saito et al. (Saito), U.S. Patent No. 6,556,473 B2.

This rejection is respectfully traversed. Applicants respectfully submit that Saito does not cure the deficiencies of claim 1, the base claim of claims 19-21. In particular, Saito does not disclose or suggest that the Odagawa interface magnetic layer 220 is crystalline when it is in isolation from both the first layer 210 and the tunnel barrier layer 120.

Consequently, Applicants respectfully request that the Examiner withdraw this rejection and allow claims 19-21.

The Rejection Under 35 U.S.C. § 103(a) Over Hosomi In View Of Odagawa

Claims 27-35 and 55 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Hosomi et al. (Hosomi), U.S. Patent Application Publication No. 2004/0136232 A1, in view of Odagawa.

Applicants respectfully traverse this rejection. Applicants respectfully submit that the subject matter according to any of claims 27-35 and 55 is patentable over Hosomi in view of Odagawa. Applicants respectfully submit that the device resulting from the combination of Hosomi in view of Odagawa is not the claimed subject matter.

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations.

The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not in Applicant's disclosure. See *In re Vaack*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). (See, also, MPEP §§ 706.02(j) and 2143).

Regarding claim 27 and the third basic criterion for establishing a *prima facie* case of obviousness, Applicants respectfully submit that neither Hosomi nor Odagawa disclose or suggest that the claimed interface layer is formed from at least one material that is crystalline when the material is in isolation from both the first layer and the tunnel barrier layer. The Examiner admits that "Hosomi et al. does [sic] not disclose the magnetic tunnel element having the structure as claimed." (See Office Action dated May 22, 2007, page 10, lines 9-10.) Accordingly, because Hosomi does not disclose the magnetic tunnel element having the structure as claimed, it follows that Hosomi cannot suggest the magnetic tunnel element having the structure as claimed. Consequently, for the combination of Hosomi in view of Odagawa to disclose or suggest all of the limitations of claim 27, all of the limitations of claim 27 must be disclosed or suggested by Odagawa.

As demonstrated above in connection with claim 1, Applicants respectfully submit that Odagawa does not disclose or suggest that the claimed interface layer is formed from at least one material that is crystalline when the material is in isolation from both the first layer and the tunnel barrier layer. That is, Odagawa does not disclose or suggest that the material of interface magnetic film 220 is crystalline when it is in isolation from both the first layer and the tunnel barrier layer. As previously shown, Odagawa discloses that interface magnetic film 220 is formed from "an alloy material containing at least one atom selected from Ni, Co, and Fe as a main component employed." (See Odagawa, paragraph [0194], lines 2-3.) That is, Odagawa discloses that interface magnetic film 220 is formed from an alloy material including Ni-Co-Fe as a main component. (See Odagawa, paragraph [0194], lines 4-8.) Accordingly, Applicants respectfully submit that the alloy to which Odagawa refers for interface magnetic film 220 for the embodiment of Figure 7A is innately amorphous. Moreover, Applicants respectfully submit that interface magnetic film 220 is not formed from the same material as the claimed subject

matter. Odagawa discloses that interface magnetic film 220 is instead formed from an alloy material including Ni-Co-Fe as a main component.

Thus, Applicants respectfully submit that claim 27 is allowable. It follows that claims 28-35 and 55, which incorporate the limitations of claim 27, are each allowable over Hosomi in view of Odagawa for at least the same reason that claim 27 is considered allowable.

Thus, Applicants respectfully submit that it is only by impermissible hindsight that the Examiner is able to reject claims 27-35 and 55 based on the combination of Hosomi in view of Odagawa. The device resulting from the combination of Hosomi in view of Odagawa is simply not the claimed subject matter. It is only by using Applicants' disclosure as a template that the Examiner is able to select particular features of Hosomi and Odagawa through a hindsight reconstruction of Applicants' claims to make the rejection.

Consequently, Applicants respectfully request the Examiner withdraw this rejection and allow claims 27-35 and 55.

Applicants note that additional patentable distinctions between Odagawa, Hayakawa, Nishimura, Saito and Hosomi and the rejected claims exist; however, the foregoing is believed sufficient to address the Examiner's rejections. Additionally, failure of Applicants to respond to a position taken by the Examiner is not an indication of acceptance or acquiescence of the Examiner's position. Instead, it is believed that the Examiner's positions are rendered moot by the foregoing and, therefore, it is believed not necessary to respond to every position taken by the Examiner with which Applicants do not agree.

CONCLUSION

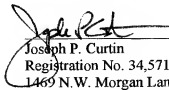
In view of the above amendments and arguments which present the claims in better form for consideration on appeal, it is urged that the present application is now in condition for allowance. Should the Examiner find that a telephonic or personal interview would expedite

passage to issue of the present application, the Examiner is encouraged to contact the undersigned attorney at the telephone number indicated below.

It is requested that this application be passed to issue with claims 1-35, and 51-55.

Respectfully submitted,

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Joseph P. Curtin
Registration No. 34,571
1469 N.W. Morgan Lane
Portland, Oregon 97229-5291
(503) 296-8373
(503) 297-0452 (facsimile)